DIGI®
When Accuracy Counts

DS-470

Check Weighing Scale

Operation Manual

RICE LAKE WEIGHING SYSTEMS
Industrial Solutions on a Global Scale®

ISO 9001 REGISTERED

73364

DS-470 SERIES OPERATING MANUAL

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✍See pages 2,8, 25,26, 27 for revisions in this manual

DS-470 OPERATING MANUAL

1.0. GENERAL

1.1. Features

The DS-470SS Check Weighing Scale offers a practical solution to a wide range of weighing applications. There are a variety of weight capacities and increments available. The display resolution is selectable from 1/3,000 to 1/15,000. It features keyboard calibration with auto-span and ON/OFF, REZERO, TARE, for one touch tare and a numeric keyboard for digital tare and set point entry. For a list of platform sizes and available capacities see page 2.

This instruction manual will provide the user with all the information necessary to understand, set-up and operate the DS-470 scale. Included in this manual are descriptions, specifications, drawings, and operating instructions.

2.0. SPECIFICATIONS

This section includes a detailed listing of all pertinent specifications and parameters for each of the DS-470 weighing scales. The system weighing accuracy is 0.02 % for all models and they meet or exceed the requirements of OIML, Class III, and NIST Handbook, Number 44.

2.1 Technical Specifications

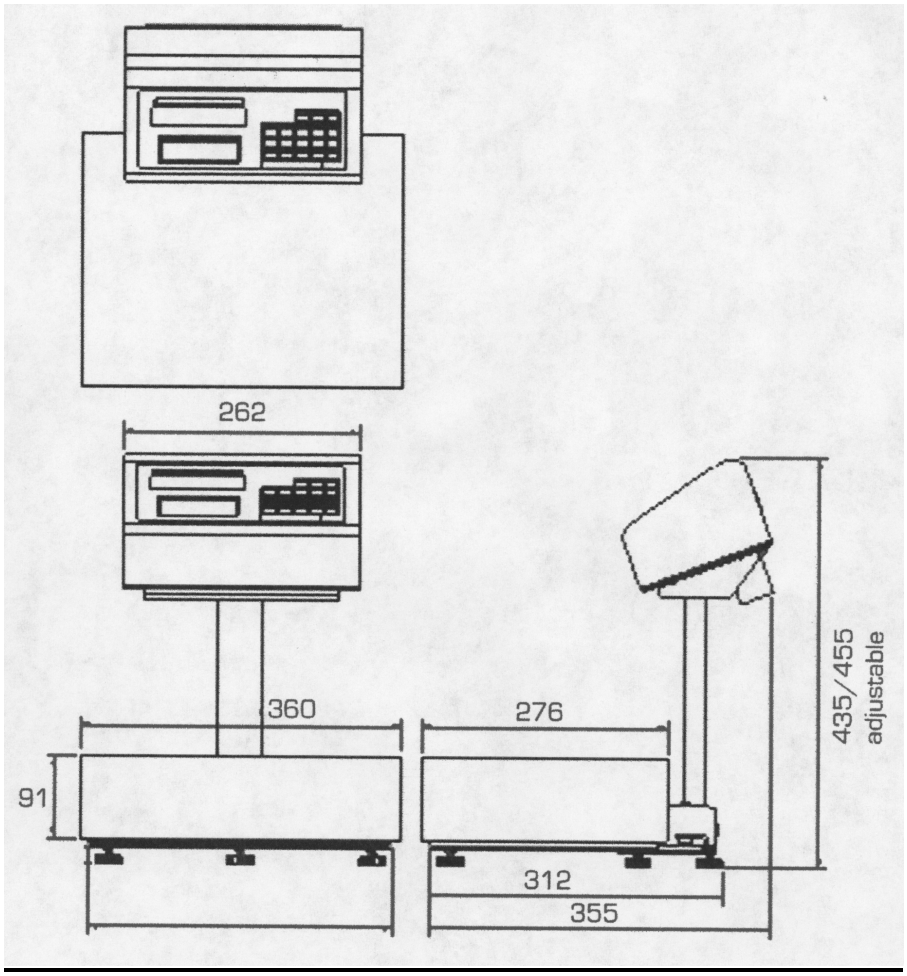
- ✳ Model Name: DS-470
- ✳ Capacity: 3kg / 6kg /15kg / 30kg
6lb / 15lb / 30lb / 60lb
- ✳ Internal Resolution: 1/600,000
- ✳ Display Resolution: Single Range: 1/3000 , 1/6000 , 1/12000 , 1/15000

	Display Resolution			
Capacity	1/3000	1/6000	1/12000	1/15000
3LB	e=0.001 lb	e=0.0005 lb	Not avail.	e=0.0002 lb
6lb	e=0.002 lb	e=0.001 lb	e=0.0005 lb	Not avail.
12lb	Not avail.	e=0.002 lb	e=0.001 lb	Not avail.
15lb	e=0.005 lb	Not avail.	Not avail.	e=0.001 lb
30lb	e=0.01 lb	e=0.005 lb	Not avail.	e=0.002 lb
60lb	e=0.02 lb	e=0.01 lb	e=0.005 lb	Not avail.
3kg	e=0.001kg	e=0.0005g	Not avail.	e=0.0002 kg
6kg	e=0.002 kg	e=0.001 kg	e=0.0005 kg	Not avail.
12kg	Not avail.	e=0.002 kg	e=0.001 kg	Not avail.
15kg	e=0.005 kg	Not avail.	Not avail.	e=0.001 kg
30kg	E=0.01 kg	e=0.005 kg	Not avail.	e=0.002 kg

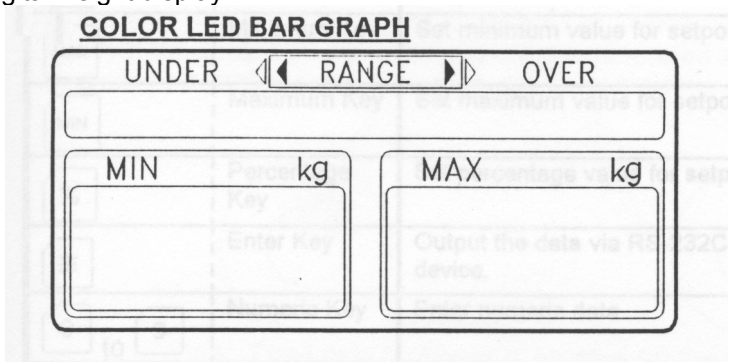
- ✳ Display type — Weight display: 7 Segments FIP display 6 digits(including minus sign) , (letter height = 13mm)
  - Min & Max display: 7 Segments FIP display 5 digits(letter height = 7mm)
- ✳ Colored LED bar graph: 5 LEDs each color Red, Green, Yellow
- ✳ Key Board: 18 mechanical keys
- ✳ Dimensions: 256(W) x 320(D) x 87(H)mm
(platter size) 256(W) x 205(D)
- ✳ Net Weight: Approximately 3kg
- ✳ Interface: RS-232C for external device (PC) or
TTL Set Point Output by specification change
- ✳ Internal Buzzer: Buzzer sounds at set point

Power Source	AC 100/110V, 220/230/240V(+10% to –15%)50 or 60 Hz
Operating Temperature	-10° degrees Celsius to 40° degrees Celsius
Relative Humidity	15% ≈ 85% RH

2.2. Physical Dimensions

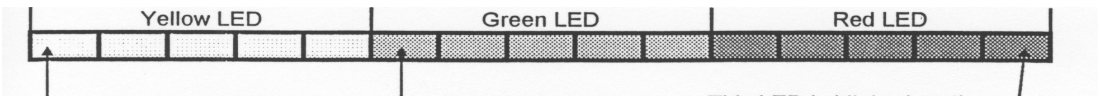


2.3. **Color LED Bar Graph LEDs** provide clear indication of weight condition between minimum and maximum besides the digital weight display.



Target range is determined by entering 2 set points (min and max range.) The value can be entered by any method described in section (5.6.) on pages 13 - 15. Set points alert the operator with both auditory and visual signals if weight is within the target range.

The graduation of LED is determined by dividing the target range by 5 (Max weight – Min weight /5)



This LED is lit as the low min. This LED is lit as the min. acceptance range. This LED is lit as the high max.

3.0. INSTALLATION

This section provides the information required for installation of the DS-470 weight indicator.

The following steps accomplish installation.

1. Unpacking
2. Set-up Procedure

3.1. Unpacking

Each component of the DS-470 is packed in a specially designed carton. Remove each component from its carton, separate the component from its polystyrene shell assembly and set aside. Inspect the carton interior to be sure that all accessories have been removed from the carton. Inspect the carton inner panels for accessories.

NOTE: Be sure to repack all materials within the carton set. Store the cartons in a secure area so they can be available whenever shipment of the scale is required.

3.2. Inspection

Immediately after unpacking, a visual inspection of the instrument should be performed. If any damage has been incurred during transportation the shipper and DIGI MATEX INC. should be notified immediately. Instructions for assessment of damage and further procedures will then be determined.

3.3. Repackaging

If, at anytime, the DS-470 check weighing scale must be returned for modification, calibration, or repair, be sure that it is properly packed with sufficient cushioning materials.

Whenever possible, the original carton assembly should be retained for this purpose. Any damage caused by improper packaging will not be covered by warranty.

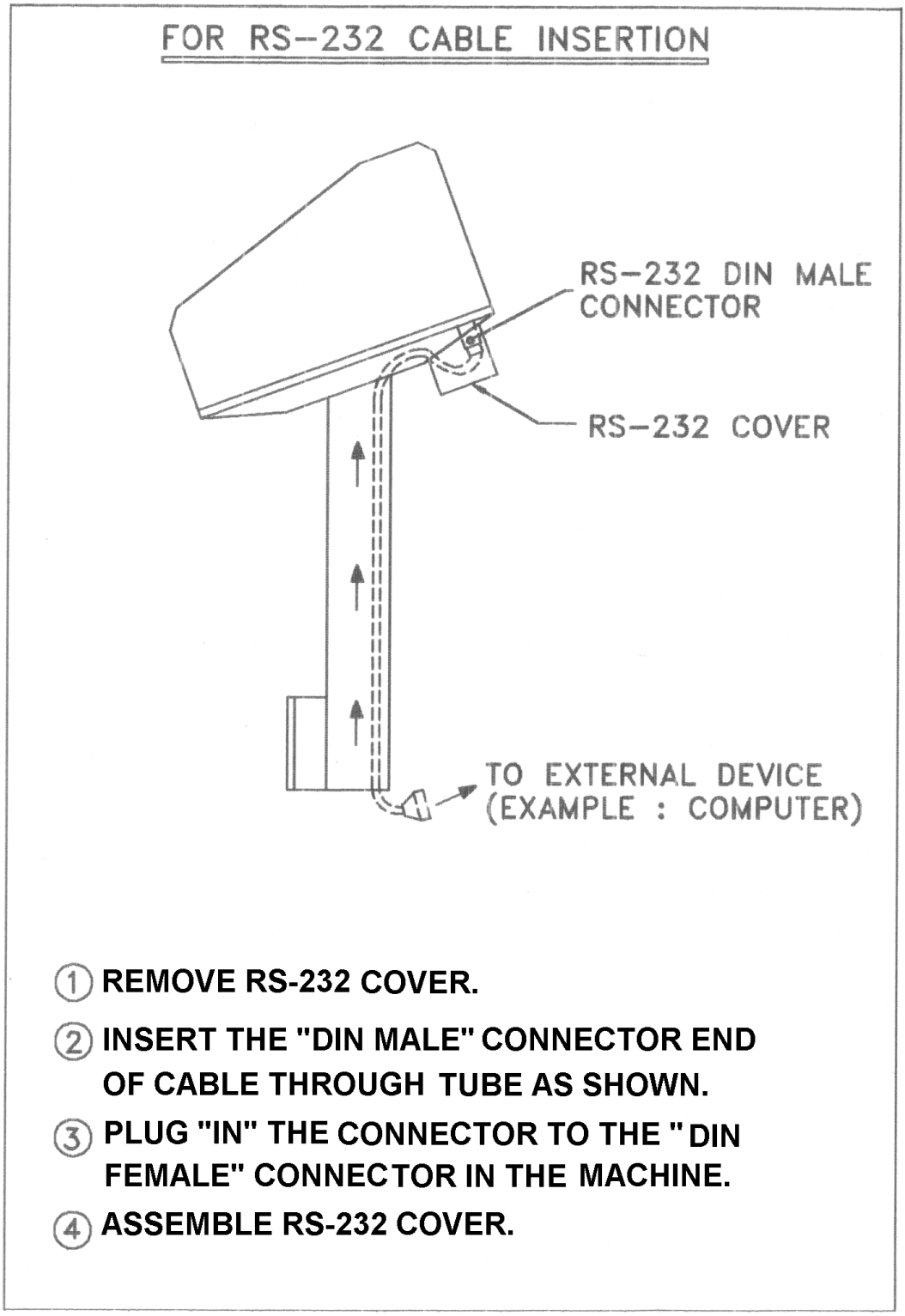
3.4. RS – 232 Cable Installation & Assembly

The DS-470 has RS-232 & set points as a standard feature and are spec selectable, pole mounting kit comes with all the necessary hardware and assembly is easy. See page 6 for details.

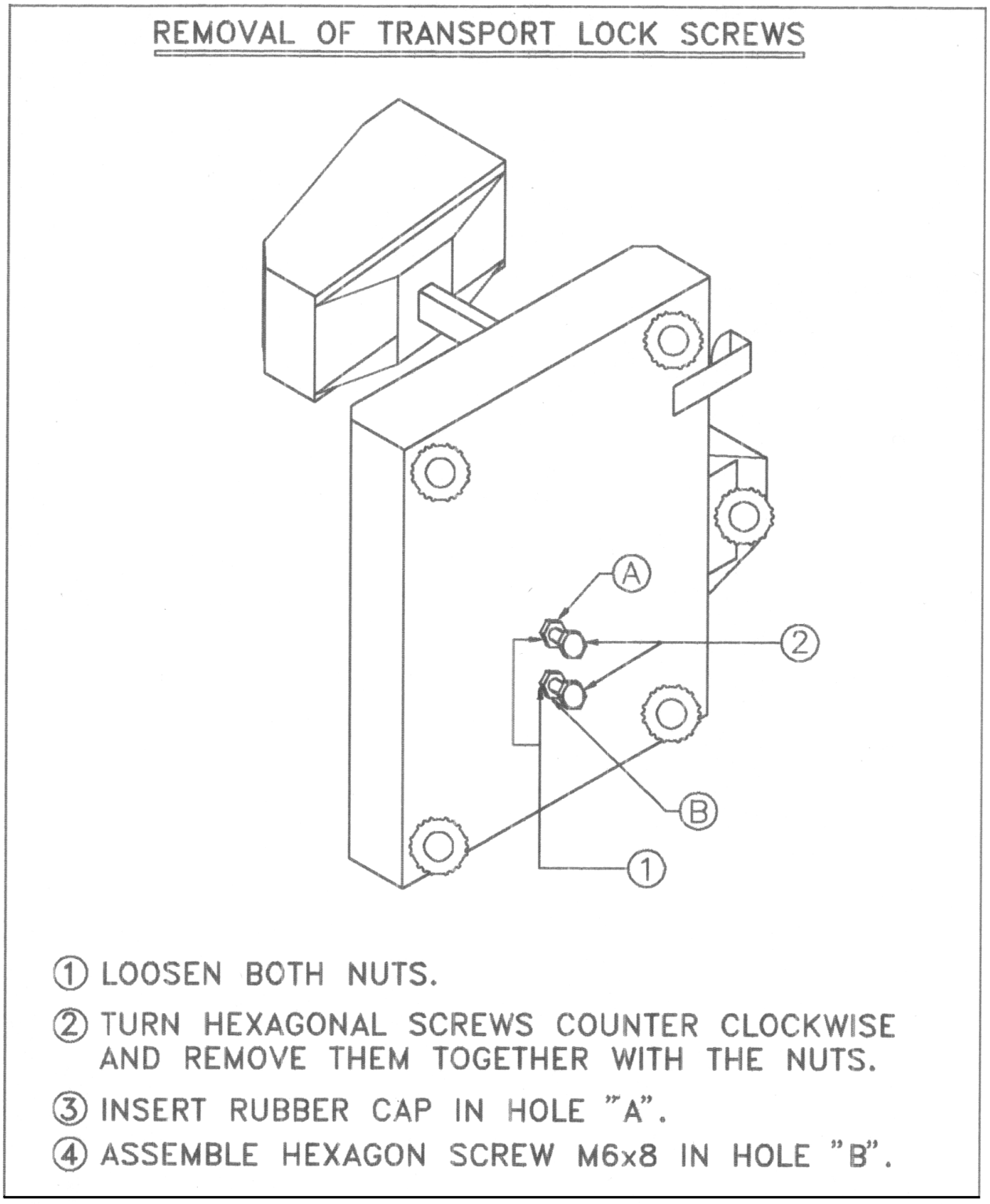
3.5. DS-470 SS Unlocking

The unlocking procedure is Included on page 6.

3.4. RS-232 Cable Installation


FOR RS-232 CABLE INSERTION
RS-232 DIN MALE CONNECTOR
RS-232 COVER
TO EXTERNAL DEVICE (EXAMPLE : COMPUTER)
① REMOVE RS-232 COVER.
② INSERT THE "DIN MALE" CONNECTOR END OF CABLE THROUGH TUBE AS SHOWN.
③ PLUG "IN" THE CONNECTOR TO THE "DIN FEMALE" CONNECTOR IN THE MACHINE.
④ ASSEMBLE RS-232 COVER.

3.5.1. DS-470 SS Unlocking Procedure


REMOVAL OF TRANSPORT LOCK SCREWS
A
2
B
1
① LOOSEN BOTH NUTS.
② TURN HEXAGONAL SCREWS COUNTER CLOCKWISE AND REMOVE THEM TOGETHER WITH THE NUTS.
③ INSERT RUBBER CAP IN HOLE "A".
④ ASSEMBLE HEXAGON SCREW M6x8 IN HOLE "B".

4.0. ELECTRICAL TEST

4.1. Set-Up Procedure

This part of the procedure is used to verify proper operation of the weighing scale.

Place the scale on a reasonably level surface. Level the scale using the adjustable legs and the level bubble guide.

Connect the AC power source, and press the "ON/OFF " key, the display will momentarily show all digits from 0 to 9 in a "count-up" mode. Then the display will blank, show all "8's", and enter the regular operating display.

If at any time the scale displays erratic data, it may be caused by a power transient. Turn the scale "off" and momentarily unplug it from the wall outlet. Then restart, by plugging the scale back in and pressing the "ON/OFF " key.

4.2. Keyboard and Display Test

This part of the procedure is used to verify proper operation of the various switches and displays.
The following functions will be tested in this procedure:

A. Re-Zero
A. Tare Entry
B. Digital Tare Entry

4.2.2. One Touch Tare

A. Press the "0" key and then the "TARE" key to reset any Tare.
B. Press “REZERO” key to re-zero the scale.
C. Place the empty container on the scale and press the "TARE" key once. The weight display should now read zero with the empty container on the scale.

4.2.3. Digital Tare Entry

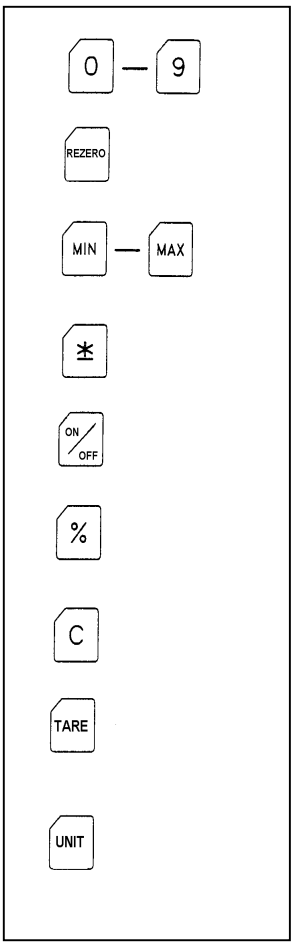
A Press the "TARE" key.
B Press the "RE-ZERO" key. After resetting, the Displays will read zero.
C Enter the number 0.2 by using the keyboard. Then press the "TARE" key.
D The weight display will show the weight entered with a negative sign indicating that the weight displayed is a Tare Weight.

OPERATION

5.1. Keysheet and Display Layout

5.2. DS-470 Key Function Summary

✍**Note: For Ver 1.19 and above Indicator lights in the weight window are as follows**
ZERO TARE lb kg g oz - and the [kg/lb] key is now labeled [UNIT]



Numeric Keys :	0 - 9
Re-Zero Key:	To return scale to zero point
MIN & MAX key:	To enter the minimum & maximum weight range Set point
ENTER key:	Used to send data with RS-232 & Used to store specs in program mode
ON / OFF key:	To turn on and off the power to the display
PERCENTAGE Key:	Used to min & max percent set point & Used to exit spec mode
CLEAR key:	Used to clear data in display
TARE key:	Used for setting and clearing tare weight
Kg/LB***(✍now unit change)***	Switch between pounds, kilograms ***(✍ now also grams and ounces see spec 3) ver1.19***

5.3. Indicator Lamps

Indicators		Function	Indicators		Function
→0←	ZERO Lamp	When weight is at zero	kg	Kg Lamp	When kilograms is selected
NET	TARE Lamp	When a tare is programmed	***g***	***g Lamp***	***When grams is selected***
lb	Lb Lamp	When pounds is selected	***oz***	***oz Lamp***	***When ounces is selected***

5.4. Operation Procedure Overview

Step 1. ----- Press ON/OFF key to turn on the power.

The numerical display windows will begin with all 0's and scroll through to all 8's. The DS-470 is ready to weigh as shown below.

0	**0**
	0.0000

Note: Please set scale on a firm surface and turn adjusting legs until bubble comes to the center of the level indicator.

Step 2. ----- 5.5. Tare Subtraction.

Step 3. ----- 5.6. Set The Min And Max Values.

Step 4. ----- 5.7. Check Weighing Operation.

Step 5. ----- 5.8. Clearing Min & Max Range

SCALE OPERATION

5.5. Tare Reduction

5.5.1. Preset Tare Operation

indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode		●			0.000	0	0
1. Enter tare weight with numeric keys. (Ex. Tare 0.900 lb.)	**[9] [0] [0]**			●	0.900	0	0
2. Subtract tare weight.	**[T]**	●	●		–0.900	0	0

5.5.2. One Touch Tare Operation

indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode		●			0.000	0	0
1. Place tare weight on platter. (Ex. Tare 0.500 lb.)					0.500	0	0
2. Press the tare key.	**[T]**		●		0.000	0	0
3. Remove the weight from platter.		●	●		–0.500	0	0

✍**NOTE: To clear a tare value, press [T] key with no weight on platter.**

✍***NOTE: When setting min & max values the scale will not allow weight unit to change, the [UNIT] key is disabled until both min & max values have been selected. The min & max values will then be converted to weight unit selected.***

5.6. Set the min and max values.

5.6.1. Programming Of Minimum And Maximum Range By Numeric Key Entry

indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode		●			0.000	0	0
1. Enter minimum weight value by using the numeric keys. (ex. 0.156 lb.)	**[1] [5] [6]**			●	0.156	0	0
2. Press MIN key to set the Minimum Value.	**[MIN]**	●			0.000	0.156	0
3. Enter maximum weight value by using the numeric keys. (ex. 0.183 lb.)				●	0.183	0.156	0
4. Press MAX key to set the Maximum Value.	**[MAX]**	●			0.000	0.156	0.183

5.6.2. Programming Of Minimum And Maximum Range By Weighing

indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode		●			0.000	0	0
1. Place weight equal to minimum value desired on platter. (Ex.0.209 lb.)					0.209	0	0
2. Press MIN key to set the minimum value.	**[MIN]**				0.209	0.209	0
3. Place weight equal to maximum value desired on platter. (Ex.0.309 lb.)					0.309	0.209	0
4. Press MAX key to set the maximum value.	**[MAX]**				0.309	0.209	0.309

5.6.3. Programming Of Minimum And Maximum Range By Entering Target Weight

indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode		●			0.000	0	0
1. Enter target weight with numeric keys. (Ex.1.000 lb.)	**[1] [0] [0] [0]**			●	1.000	0	0
2. Press % key. (input memory is 1.0 lb.)	**[%]**			●	P 0	0	0
3. Select minimum weight % using numeric keys	**[1] [2]**			●	P 12	0	0
4. Press MIN key to set the minimum value.	**[MIN]**			●	P 12	0.880	0
5. Select maximum weight % using numeric keys	**[5]**			●	P 5	0.880	0
6. Press MAX key to set the maximum value.	**[MAX]**			●	P 5	0.880	1.050
7. Press % key. (input memory is 1.0 lb.)	**[%]**	●			0.000	0.880	1.050

5.6.4. Programming Of Minimum And Maximum Range By Weighing Target Weight

Indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode		●			0.000	0	0
1. Place target weight on the platter. (Ex. The target weight is 0.620 lb.)				●	0.000	0	0
2. Press % key.	**[%]**			●	P 0	0	0
3. Press minimum weight percent by using numeric keys. (Ex. 10%)	**[1] [0]**			●	P 10	0	0
4. Press MIN key to set the minimum value. (Ex. 0.620 x (100% - 10%) = 0.558)	**[MIN]**			●	P 10	0.558	0
5. Press maximum weight percent by using the numeric keys. (Ex. 15%)	**[1] [5]**			●	P 15	0.558	0
6. Press MAX key to the maximum value. (Ex. 0.620 x (100% + 15%) = 0.713)	**[MAX]**			●	P 15	0.558	0.713
7. Press % key to enter weighing mode.		●			0.000	0.558	0.713

5.7. Check Weighing Operation

5.7.1. Using full container

Indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode. (from previous step)		●			0.000	0.558	0.713
1. Place full container on scale					1.595	0.558	0.713
2. Enter tare weight with numeric keys. (Ex. Tare 0.900 lb.)	**[9] [0] [0]** as shown in 5.3.1.			●	0.900	0.558	0.713
3. Subtract tare weight.	**[T]** as shown in 5.3.1.		●		0.695	0.558	0.713
3. If weight is within the target range the set points will operate as shown on page 19.			●		0.695	0.558	0.713
4. Once weight has been checked remove container of parts.		●			0.000	0.558	0.713

5.7. Check Weighing Operation (continued)

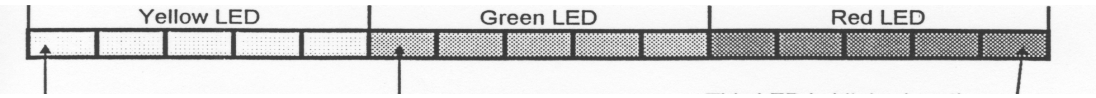
5.7.2. When filling a container

Indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode. (from 5.4.4. min & max programming)		●			0.000	0.558	0.713
1. Place empty container on scale					0.500	0.558	0.713
2. Press tare key.	**as shown in 5.3.2.**	●	●		0.000	0.558	0.713
3. Place parts in container, when weight is within the target range the set points will operate as shown below.			●		0.695	0.558	0.713
4. Once weight has been checked remove container of parts.		●	●		0.000	0.558	0.713

Set points alert the operator both auditory and visually if weight is within the target range.

The graduation of LED is determined by dividing the target range by 5 (Max weight – Min weight /5)



This LED is lit as the low min. This LED is lit as the min. acceptance range This LED is lit as the high max.

5.8. Clearing Min & Max Range

Indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode		●			0.000	0.558	0.713
1. Press minimum key	**[MIN]**	●			0.000	0	0.713
2. Press maximum key	**[MAX]**	●			0.000	0	0

6.0. RS-232

6.0.1. Communication Specs

BAUD RATE	1200 / 2400 / 4800 / 9600
START BIT	1 BIT
STOP BIT	1 / 2 BIT
DATA BIT	7 / 8 BIT
PARITY BIT	EVEN / ODD / NONE

6.0.2. Text Command

Termination code	**CR**	**The end of data**	**0DH**
	LF	**The end of text**	**0AH**
Data	**0 - 9**	**Numeric data**	**(30H – 39H)**
	Period	**Period**	**(2EH)**
	Comma	**Comma**	**(2CH)**
Header code	**:**	**Gross weight**	**(3AH)**
	0	**Net weight**	**(30H)**
	4	**Tare weight**	**(34H)**
Weight stable	**B**	**Set –point status**	**(42H)**
	SOH	**Weight stable**	**(01H)**
	NUL	**Weight unstable**	**(00H)**

6.1.3. PIN ASSIGNMENT

PIN NO.	SIGNAL
1	SP1
2	S GND
3	SP2
4	RXD
5	TXD
6	CTS
7	RTS

6.1.4. COMMUNICATION METHOD

By specification setting (Spec 59 bit 2 & 3), the communication method may be selected from Stream (continuous output), Manual (output by pressing **[✳]** key, and Command (output by command from external device).

6.1.4.1. STREAM

Data is transmitted to external device continuously.

DATA STREAM:
The SPEC to select whether weight stable status or not by specification setting (Spec 53 bit 3).
Example: without stable flag

STX	Header	Gross Weight	CR	Header	Net Weight	CR
1	1	5	1	1	5	1

Header	Tare Weight	CR	Header	Set-point Status	CR	LF
1	5	1	1	2	1	1

Example: with stable flag

STX	Stable	Header	Gross Weight	CR	Header	Net Weight	CR
1	1	1	5	1	1	5	1

Header	Tare Weight	CR	Header	Set-point Status	CR	LF
1	5	1	1	2	1	1

Weight Stable Status:

Status	Data
Stable	SOH (01 H)
Un-stable	NUL (00 H)

Set-point status

Status	Data		
Set-point is not programmed	B	1	1
Weight < Set-point 1	B	1	1
Set-point 1 < Weight <Set-point	B	0	1
Set-point 2 < Weight	B	0	0

The Data is transmitted when the machine is in operation mode. While entering numeric data, the transmission would be stopped.

6.1.4.2. MANUAL

Data is output by pressing **[*]** key. User may select to transmit the data right away or to hold the command until weight becomes stable (from Spec 59 bit 1). If weight is not back to stable within a certain interval (from Spec 59 bit 0), TIME OUT ERROR will appear on the display. The two communication methods may be selected in this mode.

6.1.4.2.1. MANUAL (METHOD 1)

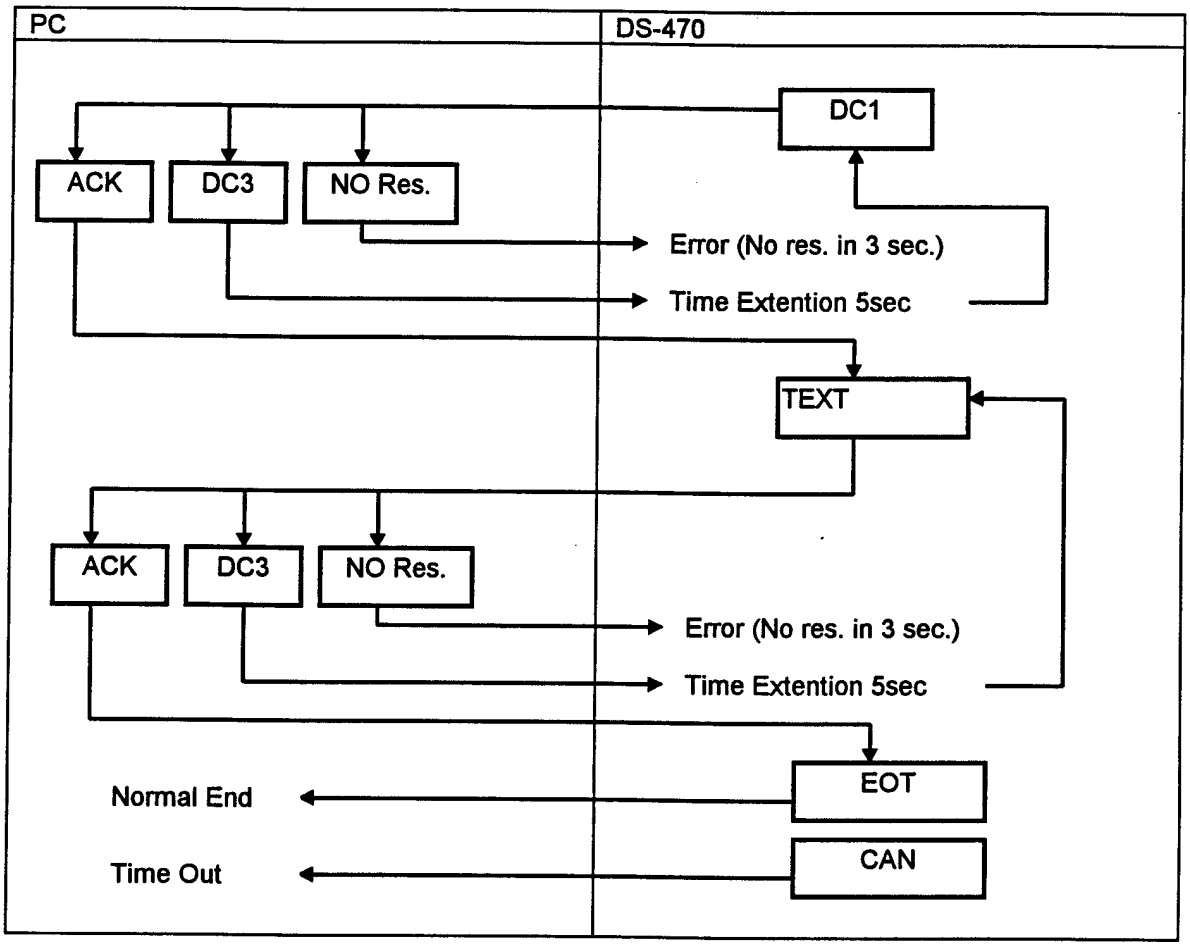
DATA FORMAT:

Example: By pressing **[*]** key.

STX	Header	Gross Weight	CR	Header	Net Weight	CR
1	1	5	1	1	5	1

Header	Tare Weight	CR	Header	Set-point Status	CR	LF
1	5	1	1	2	1	1

- ***FLOW CHART***



6.1.4.2.2. MANUAL (METHOD 2)

The data text can be selected without headers or with headers (by setting Spec 56 bit 3)

DATA FORMAT:

Example: Without header codes

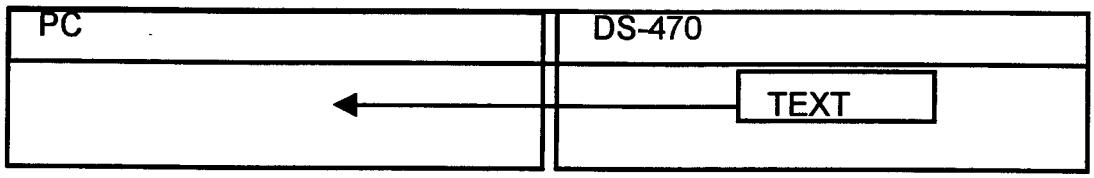
Gross Weight	CR	Net Weight	CR	Tare Weight	CR	LF
5	1	5	1	5	1	1

Example: With header codes

STX	Header	Gross Weight	CR	Header	Net Weight	CR
1	1	5	1	1	5	1

Header	Tare Weight	CR	Header	Set-point Status	CR	LF
1	5	1	1	2	1	1

- ***FLOW CHART***



6.1.4.3. COMMAND

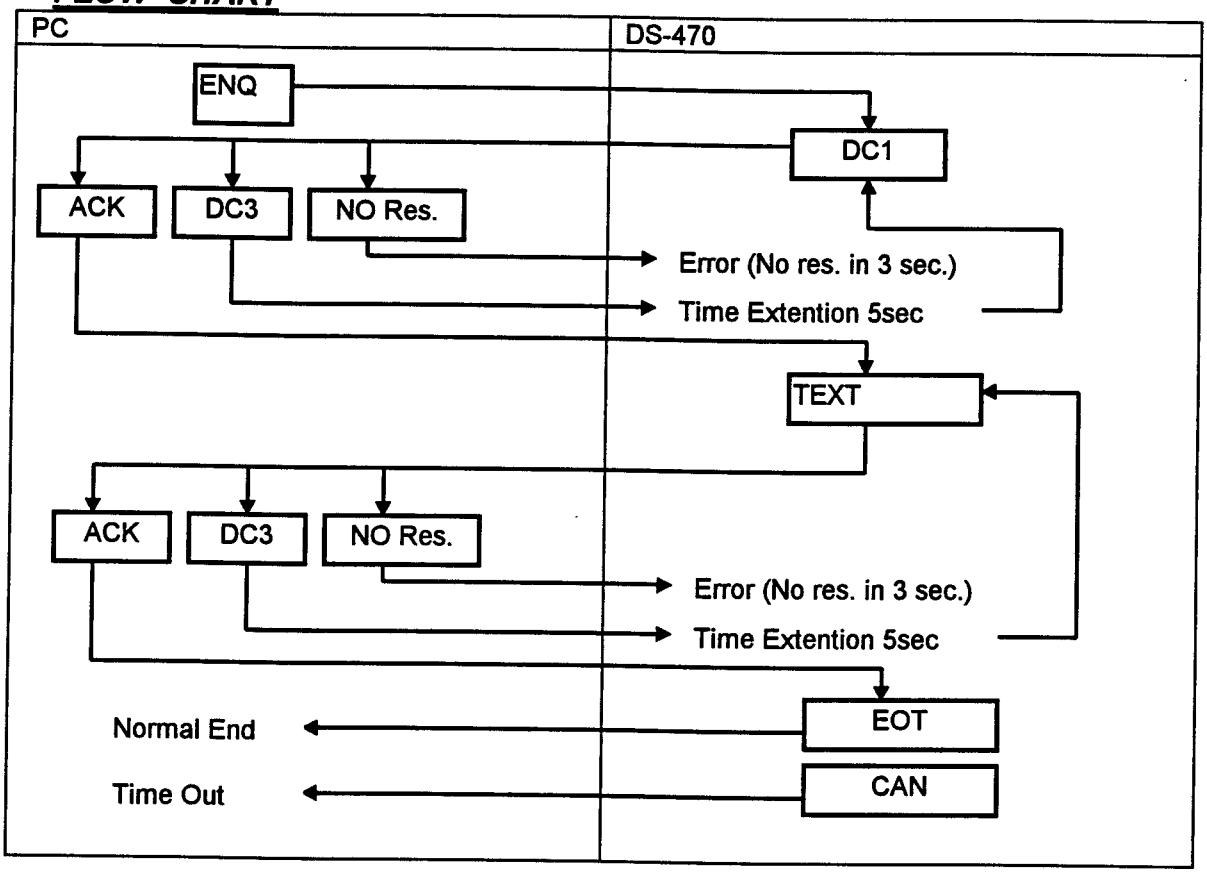
Data is transmitted by receiving ENQ from external device. By specification setting (Spec 59, Bit 1), it is to select to transmit the data right away or to hold the command until weight becomes stable. If weight is not back to stable within a certain interval (by specification setting Spec 59 bit 0), TIME OUT ERROR will appear on the display.

Example:

STX	Header	Gross Weight	CR	Header	Net Weight	CR
1	1	5	1	1	5	1

Header	Tare Weight	CR	Header	Set-point Status	CR	LF
1	5	1	1	2	1	1

• ***FLOW CHART***



6.2. Transmit Set-Point Data

6.0.1. Transmit Set-Point Data From External Device

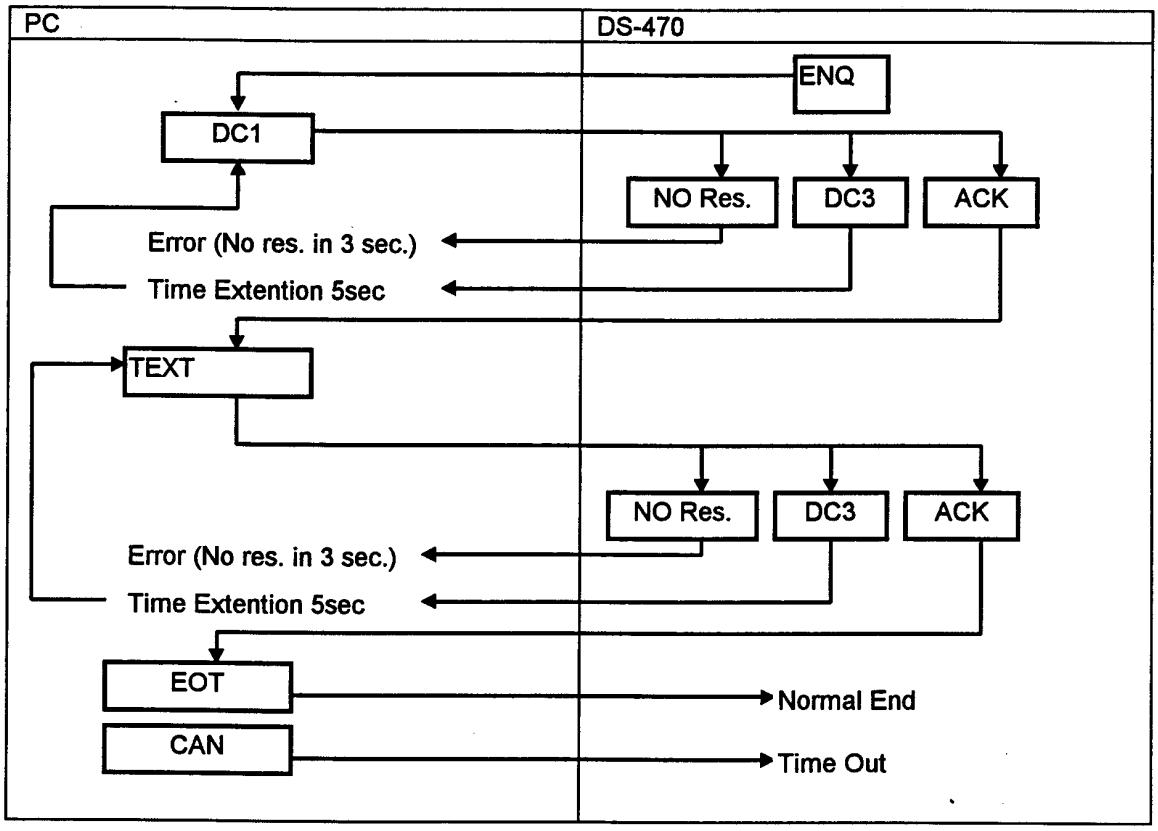
If Set-point data from an external device spec(spec 53 bit 2) is enabled and when MAX key is pressed without entering numeric data I Operation mode, the scale would send ENQ data and the external device would send the set-point data back.

TEXT COMMAND

Termination code	CR	The end of data	0DH
	LF	The end of text	0AH
Data	0 –9	Numeric data	(30H – 39H)
	Period	Period	(2EH)
	Comma	Comma	(2CH)
Header code	F	Set-point 1	(46H)
	H	Set-point 2	(48H)

DATA FORMAT:

Header	Set-point 1	CR	Header	Set-point 2	CR	LF
1	5	1	1	5	1	1



6.0.2. Transmit Set-Point Data To External Device

If Set-point data to an external device spec (spec 53 bit 2) is enabled and when MAX key or MIN key is pressed in the in Operation mode, the scale would send DC2 or DC4 and the external device would receive the set-point data.

TEXT COMMAND

Termination code	CR	The end of data	0DH
	LF	The end of text	0AH
Data	0 –9	Numeric data	(30H – 39H)
	Period	Period	(2EH)
	Comma	Comma	(2CH)
Header code	F	Set-point 1	(46H)
	H	Set-point 2	(48H)

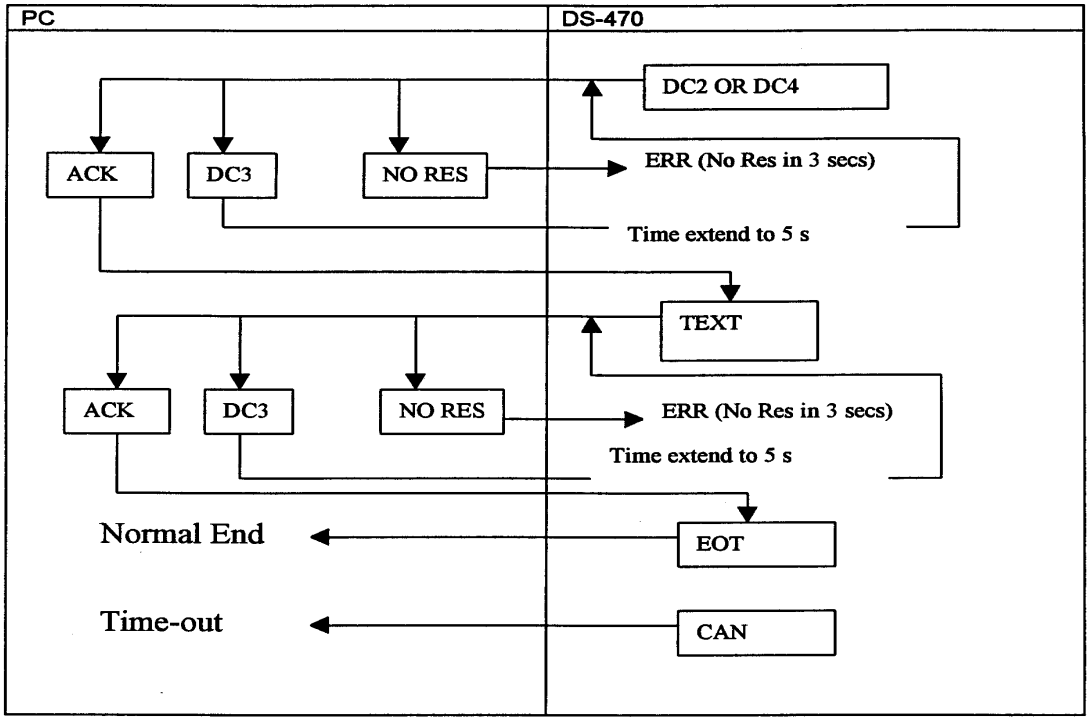
DATA FORMAT:

Example 1: Send MINimum set -point by pressing **[MIN]** key and scale sends DC2 to external device.

STX	Header	MIN Set-point	CR	LF
1	1	5	1	1

Example 2: Send MAXimum set -point by pressing **[MAX]** key and scale sends DC4 to external device.

STX	Header	MAX Set-point	CR	LF
1	1	5	1	1



7.0. MAINTENANCE, CALIBRATION, TEST PROCEDURE & SERVICE

This section contains information and instructions concerning maintenance of the DS-470 check weighing scale.

Preventive maintenance consists of periodically cleaning the external surfaces of the instrument and should be performed as often as operating conditions warrant.

The calibration procedure is designed to be an aid in maintaining the scale accuracy within specifications. The calibration procedure may also serve as a performance test procedure.

CAUTION: DO NOT ATTEMPT ANY SERVICE WHILE THE INSTRUMENT IS CONNECTED TO THE POWER LINES.

7.1. Maintenance Procedures

7.1.1. Exterior Maintenance

The exterior surfaces of the counting scale can be easily cleaned using soap and water. However, extreme caution should be used so that there is no possibility of water penetration into the scale electrical or mechanical sections. A damp cloth or sponge is suggested. NEVER USE ACETONE, MEK, OR SIMILAR SOLVENTS ON THE PLASTIC HOUSING AS THEY WILL ETCH THESE SURFACES.

For grease or other difficult spots, a chlorothane or naptha based cleaner may be used. Never use any solvents on the front or rear panels.

Accumulations of dust or direct particles between the pins of the connectors may be removed by using dry forced air or a small dry brush.

7.1.2. Internal Maintenance

Internal maintenance is not normally required and if it is, should not be attempted except by a qualified, authorized service technician.

7.1.3. Calibration

The following procedure should be followed periodically (every six to twelve months is suggested) to determine that the scale is functioning in all modes.

a. Electrical

Follow section 4.0 through all its steps

7.1.3 Continued

b. **Accuracy**

Weighing: The scale weighing accuracy can be determined by applying various known weights to the platform. Because of the scale's very high accuracy, only weights that are certifiably more accurate than the scale's specifications should be used in testing for accuracy. (NBS class "F" or higher)

Since the scale owner does not normally have such certifiable weights available to him, it is suggested that the customer call their authorized
DIGI dealer.

7.2. Service & Repair

No service or repair should be attempted except by qualified personnel, and not until it has been positively determined that the counting scale requires such service. All service should be done in a clean, dry, dust-proof area.

7.3. DS-470 Specification List

7.3.1. Customer Spec Setting

To change the **CUSTOMER SPEC** setting

Indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode		●			0.000	0	0
Enter customer spec mode	**[Re-zero] [1] [4] [1]**				SPC 50		0000
Enter new spec data. Old data will be displayed in MAX window, new data will be displayed in MIN window.	**[0] [0] [1] [0]**				SPC 50	0010	0000
Advance to the next spec number, will not save new data.	**[MAX]**				SPC 51		1111
Returns to previous spec, this will not save new data entered.	**[MIN]**				SPC 50		0010
Clears the data to all 0's in the MIN window.	**[C]**				SPC 50		0000
Advance to the next spec number and save new data.	**[∗]**	●			0.000	0	0
Save spec changes and exit to weighing mode.	**[%]**	●			0.000	0	0

Customer Specification: To enter this mode, press and hold the re-zero key, while holding the re-zero press 1 , 4 , 1.

Sequence: [Re-zero] [1] [4] [1].

Spec no.	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0**
50	Not used	Not used	Not used	Not used
51	Not used	Not used	Not used	Not used
52	Not used	Not used	Not used	Not used
53	Stream Method 0 = No Weight Stable Status 1 = Weight Stable Status	Not used	Set Point TTL Output 0 = Active Low 1 = Active High	Set Point Buzzer 0 = No 1 = Yes
54	RS-232 connection 0 = no 1 = yes	Baud Rate For RS-232 Option 000 = 1200 010 = 4800 100 = not used 001 = 2400 011 = 9600 101 = not used		
55	Parity Bit (Optional) 00 = no 10 = even 01 = odd 11 = not used		RS-232 stop bit (optional) 0 = 2 bits , 1 = 1 bit	RS-232 data length (optional) 0 = 8 bits , 1 = 7 bits
56	Manual 2 Mode Header Code 0 = no , 1 = yes	Set Point buzzer range 0 = within min & max 1 = outside min & max	Not used	Not used
57	Not used	Not used	Set Point External Communication 00 = not used 01 = RS-232 set point data from external device to DS-470 10 = RS232 set point data to external device from DS -470 11 = not used	
58	Not used	Not used	Not used	Not used
59	RS-232 Mode 00 = stream 10 = manual 2 01 = manual 1 11 = command		Manual Mode By ∗Key Press 0 = transmit right away 1 = transmit after weight stable	Delay For Time –out Error 0 = 3 seconds 1 = 5 seconds

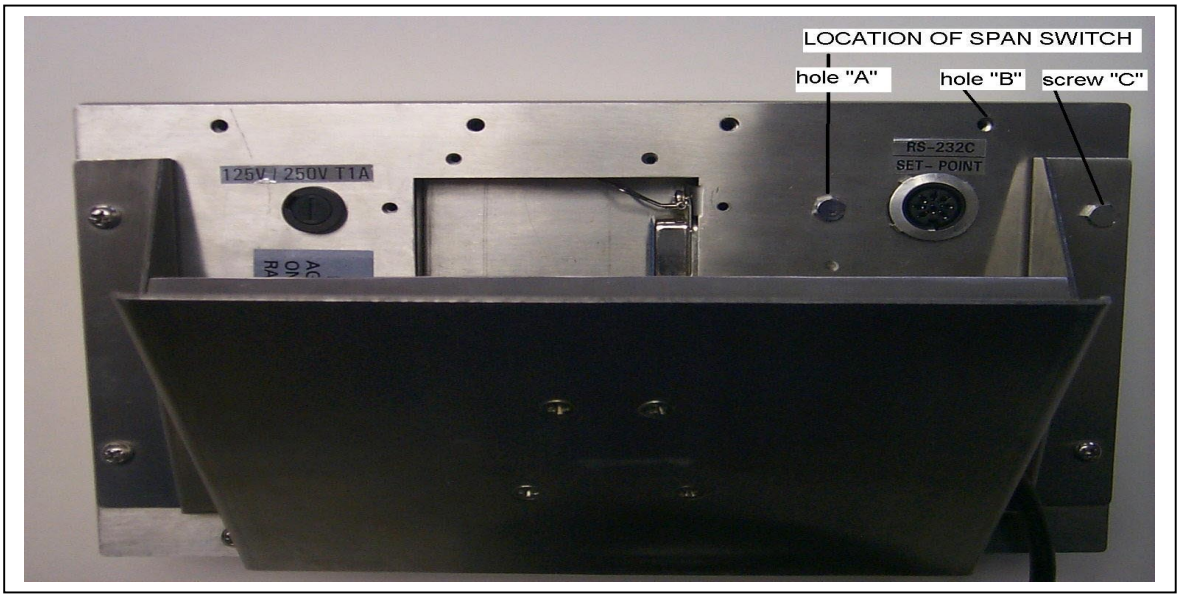
7.3.2. Weights & Measures Spec Setting

To change the **WEIGHTS & MEASURES SPEC** setting

Indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode		●			0.000	0	0
Enter weights & measures spec mode	**[Re-zero] [1] [4] [2]**				SPC 00		0000
Enter new spec data. Old data will be displayed in MAX window, new data will be displayed in MIN window.	**[0] [0] [1] [0]**				SPC 00	0010	0000
Advance to the next spec number, will not save new data.	**[MAX]**				SPC 01		1111
Returns to previous spec, this will not save new data entered.	**[MIN]**				SPC 00		0010
Clears the data to all 0's in the MIN window.	**[C]**				SPC 00		0000
Advance to the next spec number and save new data.	**[∗]**	●			0.000	0	0
Save spec changes and exit to weighing mode.	**[%]**	●			0.000	0	0

LOCATION OF SPAN SWITCH ✍***new information*** ***Ver 1.19***



1. Remove access cover with four knurled and slotted screws.
2. Remove hex head screw in hole "A".
3. Insert long thin rod into hole "A".
4. Push span switch. Display shows S-On, the W & M specs and calibration can now be performed.

When calibration is finished and the scale is ready to be sealed

1. Install hex screw in hole "A" to cover span switch.
2. Install access cover
3. Install supplied hex screw in hole "B", replacing one of the knurled and slotted screws.
4. Install wire seal from screw "B" to screw "C".

Weight and Measures Specification : The Span Switch must be on to enter this mode. To enter this mode, press and hold the Re-zero Key, while holding the Re-zero press 1, 4, 2, then release the Re-zero key.

Sequence: [Re-zero] [1] [4] [2].

Spec No.	Bit 3	Bit 2	Bit 1	Bit 0
0	Display Resolution 00 = 1/3000 01 = 1/6000 10 = 1/12000 11 = 1/15000		Not used	0 = single range 1 = multi range
1	Display 0 = decimal pt 1 = comma	Weight Decimal Point Position 000 = 00000 001 = 0000.0 010 = 000.00 011 = 00.000 100 = 0.0000		
2	Not used	Minimum Display 000 = 1 001 = 2	010 = 5 011 = 10	100 = not used 101 = not used
3	***Change Units*** ***(lb.↔ kg ↔g ↔ oz)*** ***0 = no*** ***1 = yes*** ***✍ new spec ver1.19***	Not used	IR Mode Protected By Span Switch 0 = no 1 = yes	Change Units (lb.↔ kg) 0 = no 1 = yes
4	Set-Point Buzzer Range (Outside Min & Max) /Print Range(RS-232) 00 = >net 5d & gross 21d 01 => net 1d 10 => net 19d 11 => net 20d		Auto Tare Clear Range 0 = gross over 20d and net over 4d 1 = gross over 0d and net over 1d	Not used
5	Not used	Not used	Not used	Not used
6	Not used	Not used	Not used	Not used
7	Not used	Not used	Not used	Not used
8	Not used	Not used	Not used	Not used
9	Not used	Not used	Not used	Not used

Weight and Measures Specification (continued):

Spec No.	Bit 3	Bit 2	Bit 1	Bit 0
20	Tare Addition 0 = yes 1 = no	Dual Range 0 = multi gross 1 = multi net	Digital Tare Setting 0 = no 1 = yes	Tare Range 0 = 50% of max 1 = 100% of max
21	Not used	Not used	Digital Tare Rounding 0 = tare exactly 1 = round to nearest increment	Tare Auto Clear 0 = no 1 = yes
22	Not used	Not used	Not used	Not used
23	Not used	Not used	Not used	Not used
24	Load Cell Sensitivity Selection (mV/V) Value — Minimum — Maximum 0000 — 3.46 — 4.00 0001 — 3.00 — 3.46 0010 — 2.59 — 3.00 0011 — 2.25 — 2.59 0100 — 1.95 — 2.25 0101 — 1.69 — 1.95 0110 — 1.46 — 1.69 0111 — 1.27 — 1.46 1000 — 1.09 — 1.27 1001 — 0.95 — 1.09 1010 — 0.82 — 0.95 1011 — 0.71 — 0.82 1100 — 0.61 — 0.71 1101 — 0.53 — 0.61 1110 — 0.48 — 0.53 1111 — 0.40 — 0.46			
25	Not used	Not used	Not used	Not used
26	Not used	Not used	Not used	Not used
27	Not used	Not used	Not used	Not used
28	Not used	Not used	Re-zero Tracking Range 0 = +/- 2% 1 = unlimited	Power-On Start Range 0 = +/- 10% 1 = unlimited
29	Not used	Not used	Not used	***Enter weight for Calibration*** ***0 = no*** ***1 = yes*** ***✍new spec ver1.10+***

7.4. Span Switch Status

To check position of **SPAN SWITCH**

Indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode		●			0.000	0	0
1. Press & hold Re-zero while pressing 2, 8, 4	**[Re-zero] [2] [8] [4]**				S-ON or S-OFF		
S-ON = Span switch enabled							
S-OFF = Span switch disabled							
Scale returns to weighing mode after 3 seconds.		●			0.000	0	0

7.5. Internal Count

To check the **INTERNAL COUNT** of the **A/D**

Indicators	1 : →□←	2 : NET	3 : ➔❮❯

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode.		●			0.000	0	0
1. To display the internal count, press & hold Re-zero while pressing 0, 0, 9.	**[Re-zero] [0] [0] [9]**				00000		
2. To view A/D count.	**[C]**				10000		
3. to toggle back to internal count.	**[C]**				00000		
4. Exit to weighing mode.	**[%]**	●			0.000	0	0

7.6. Calibration Mode

To **CALIBRATE** the scale, the span switch must be enabled.

Indicators	1 : →□←	2 : NET	3 : ➔◄►

TASK	OPERATION	INDICATORS			DISPLAY		
		1	2	3	WEIGHT	MIN	MAX
Weighing mode.		●			0.000	0	0
1. Press Span Switch					S-on		
2. To enter calibration mode, press & hold Re-zero while pressing 8, 7, 1, 5.	**[Re-zero] [8] [7] [1] [5]**				90614	CAL00	0.002
3. Press Re-zero key.	**[Re-zero]**				90614	CAL00	0.000
4. With no weight on the platter, press **[∗]** key in order to calibrate the zero point.	**[∗]**				- - - - -	- - - - -	- - - - -
Span Calibration					0.000	CALSP	87342
5. Place capacity test weight on platter					0.271	CALSP	66000
6. Press **[∗]**key in order to calibrate the span.	**[∗]**				- - - - -	- - - - -	- - - - -
7. After a few seconds, the scale shows the span counts.					60000	SPAn	CoUnt
8. Remove the weight. Press **[%]** key to exit calibration mode.	**[%]**	●			S-on		
9. Calibration finished. Press Span Switch to return to the weighing mode.		●			0.000	0	0

7.7. Error Indication

Overflow – Indication – weight display blanks and all range indicator lights flash.

Underflow – Indication – weight display blanks and all range indicator lights flash.

When scale is outside the re-zero range – Indication –Display shows all 8's
88888 88888
888888

When calibrating scale and scale is behind zero – Indication – Display shows
PrESS
SPr Int

When calibrating scale and calibration weight is incorrect – Indication – Display shows (incorrect value) 10000 - - - - -
- - - - - -

When calibrating scale and mV/V setting is incorrect – Indication – Display shows (all dashes) - - - - - - - - -
- - - - - -

7.8. Shop Notes

DS-470 Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for one year.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, "Protecting Your Components From Static Damage in Shipment," available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

THESE WARRANTIES EXCLUDE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NEITHER RLWS NOR DISTRIBUTOR WILL, IN ANY EVENT, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

RLWS AND BUYER AGREE THAT RLWS'S SOLE AND EXCLUSIVE LIABILITY HEREUNDER IS LIMITED TO REPAIR OR REPLACEMENT OF SUCH GOODS. IN ACCEPTING THIS WARRANTY, THE BUYER WAIVES ANY AND ALL OTHER CLAIMS TO WARRANTY.

SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

No terms, conditions, understanding, or agreements purporting to modify the terms of this warranty shall have any legal effect unless made in writing and signed by a corporate officer of RLWS and the Buyer.

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